



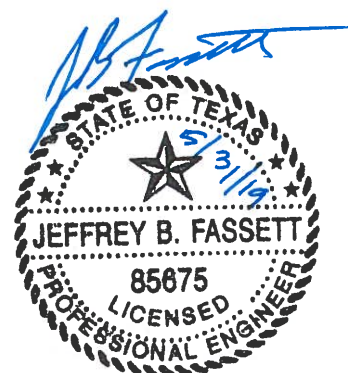
FOP O&M PLAN

FORMER OPERATING PLANT WASTE AREAS OPERATION & MAINTENANCE PLAN

Former Exide Technologies Frisco Recycling Facility
Frisco, Texas

Submitted To:

Exide Technologies
7471 Old Fifth Street
Frisco, TX 75034



GOLDER ASSOCIATES INC.
TEXAS REGISTRATION F-2578

Submitted By:

Golder Associates Inc.
14950 Heathrow Forest Parkway, Suite 280
Houston, TX 77032

May 2019

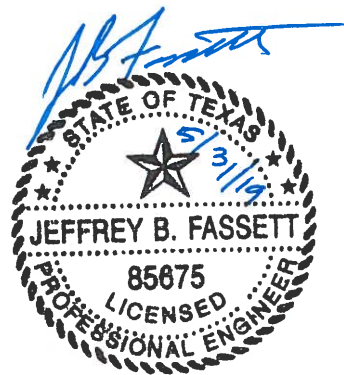
130208606





Table of Contents

1.0	INTRODUCTION.....	1
1.1	Background	1
1.2	Organization of Report	1
2.0	ACTIVE WASTE PLACEMENT OPERATIONS PROCEDURES	3
2.1	Preparation for Waste Placement	3
2.1.1	RCA.....	3
2.1.2	NDA and Slag Landfill	4
2.2	Waste Acceptance Limits and Testing	4
2.3	Method of Waste Placement	5
2.3.1	Hauling	5
2.3.2	Rainfall Events	5
2.3.3	Interim Storage.....	6
2.3.4	Waste Lifts	6
2.3.5	Ponded Water	6
2.4	Physical Criteria of Waste	6
2.5	Daily Cover Operations	7
2.6	Equipment Decontamination	7
3.0	FINAL CLOSURE PROCEDURES	9
3.1	Working Surface Soil.....	9
3.2	Geosynthetic Clay Liner	9
3.3	Geomembrane Barrier	10
3.4	Geotextile/Geocomposite	10
3.5	Clean Fill Material	10
3.6	Vegetative Cover Soil.....	10
4.0	CONTACT WATER AND STORMWATER MANAGEMENT PROCEDURES	11
4.1	Water Management During Active Filling and Closure Operations	11
4.1.1	Contact Storm Water Management	11
4.1.2	Exterior Storm Water Management	11
4.1.3	Decontamination Water	11
4.2	Post-Closure Water Management.....	11
4.2.1	Storm Water Management.....	12
5.0	SUPPORT OPERATIONS PROCEDURES.....	13
5.1	Waste Hauling Vehicles and Traffic Control	13
5.2	Surveying	13
5.3	Soil Erosion and Sediment Control	13
5.4	Noise Control.....	13
5.5	Odor Control, Air Monitoring and Dust Suppression.....	13



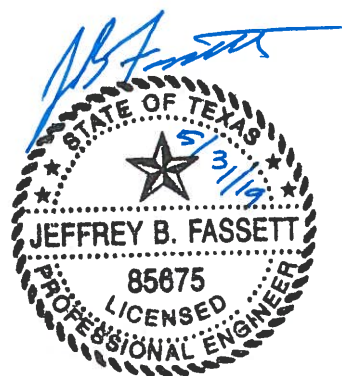
GOLDER ASSOCIATES INC.
TEXAS REGISTRATION F-2578



5.6	Site Security	14
5.7	Fire Protection and Emergency Measures.....	14
6.0	INSPECTIONS AND MONITORING.....	15
6.1	Active Operations Site Inspections and Monitoring	15
6.1.1	General FOP Waste Area Conditions and Operating Conditions.....	15
6.1.2	Final Cover.....	16
6.2	Post-Closure Inspections, Maintenance and Monitoring	17
7.0	EQUIPMENT	18
7.1	Heavy Equipment.....	18
7.2	Support Equipment	18
7.3	Stationary Operating Equipment and Tools	18
7.4	Equipment Maintenance Requirements.....	19
8.0	PERSONNEL AND TRAINING	20
8.1	Personnel	20
8.1.1	Site Manager.....	20
8.1.2	Equipment Operators.....	21
8.1.3	Laborers	21
8.2	Personnel Training	21
8.3	Worker Safety Programs.....	22
8.4	Coordination	22

List of Appendices

Appendix A Inspection and Maintenance Forms



GOLDER ASSOCIATES INC.
TEXAS REGISTRATION F-2578



1.0 INTRODUCTION

Golder Associates Inc. (Golder) has prepared this operation and maintenance plan (O&M Plan) for the Remediation Consolidation Area (RCA), the North Disposal Area (NDA) and the Slag Landfill at the Former Operating Plant (FOP) of the Exide Technologies (Exide) Frisco Recycling Center in Frisco, Collin County, Texas. A Site Location Map is provided as Figure 1 of the Final Closure Plan, to which this Operations and Maintenance Plan (O&M Plan) is an appendix. The Site Layout is depicted in Figure 2 of the Final Closure Plan. The RCA (and potentially the NDA, and Slag Landfill) will be used for the disposal of excavated soil from affected properties at the FOP and excavated sediment from Stewart Creek (RCA only). An engineered cap will be placed over the RCA, NDA and Slag Landfill once waste placement is complete.

1.1 Background

For the purposes of this O&M Plan, the Remediation Consolidation Area (RCA), the North Disposal Area (NDA), and the Slag Landfill will be referred to as the “FOP waste areas”. The RCA will be constructed over the former operational areas of the FOP, as shown on Figure 2 of the Closure Plan. Per the Response Action Plan (RAP) for the FOP, which is submitted with the May 2019 supplement to the hazardous waste permit renewal application, the RCA will contain a) surface soils exceeding applicable protective concentration levels (PCLs) excavated from affected property at the FOP where no cap is planned, b) sediments and waste materials exceeding applicable PCLs removed from portions of Stewart Creek downstream from the FOP and c) other approved remediation waste.

Following removal of topsoil and vegetation on the Slag Landfill and NDA, excavated soil, battery case fragments, concrete or other remediation waste from affected properties on-Site (which is approved for placement in the RCA in accordance with Attachment Q of the of May 2019 supplement to the hazardous waste permit renewal application) may be placed on the top of the footprint of the Slag Landfill or NDA to facilitate achieving final waste grades before capping. This is permitted through the use of the AOC policy as further described in Attachment M (RAP) of the May 2019 supplement to the hazardous waste permit renewal application.

As described in the RAP, approximately 82,000 cubic yards of soils and/or sediments (in place cubic yards) will be placed in the RCA. An engineered cover will be placed over the consolidated soil and sediment after this response action has been implemented.

1.2 Organization of Report

This O&M Plan provides general instructions to be followed by Site management and operating personnel for operations throughout the operating life of the RCA and waste placement within the NDA and Slag Landfill. This O&M Plan also includes a description of waste management practices to be followed during closure, including removal and decontamination of equipment and devices during closure activities. The operations and maintenance items included in this O&M Plan are as follows:



- Section 2.0 presents the RCA, NDA and Slag Landfill Filling Procedures;
- Section 3.0 presents the Final Closure Procedures;
- Section 4.0 details the specific Storm Water Management Procedures;
- Section 5.0 presents Support Operations Procedures;
- Section 6.0 presents Inspection and Monitoring Procedures;
- Section 7.0 outlines Equipment Descriptions; and
- Section 8.0 discusses Personnel and Training.

Inspections, monitoring, and maintenance protocols during the post-closure period are included in the Final Closure Plan text, to which this O&M Plan is an appendix. Other information previously submitted in existing documents or in the Final Closure Plan is referenced where appropriate.



2.0 ACTIVE WASTE PLACEMENT OPERATIONS PROCEDURES

This section describes the site-specific procedures for preparation and active FOP waste areas filling operations including management objectives, the waste acceptance criteria, working face practices, and placement of waste lifts. Support functions including stormwater management procedures to be followed during the active period are presented in Section 4.0 of this document.

2.1 Preparation for Waste Placement

2.1.1 RCA

Monitoring wells within the RCA will be abandoned prior to waste placement activities (see Figure 3 of the Final Closure Plan as well as the RAP for additional information on well abandonment). Concrete walls and foundations associated with the FOP operations are present within the RCA. To facilitate waste placement, to the extent practical, the walls and above grade foundations will be demolished. The resulting rubble will be spread on the surface of the existing concrete slab.

The Facility's on-site wastewater treatment facility will be demolished prior to waste placement. Remaining concrete walls and foundations will be demolished and spread over the concrete slab prior to extending the waste placement in this area.

A barrier wall to protect against potential flood waters from Stewart Creek was constructed along the southern boundary of the FOP as part of the 1987 Agreed Order with the Texas Water Commission. The steel-reinforced concrete barrier wall effectively forms a new bank to the creek. A vertical extension of the existing barrier wall and a new lateral extension of this wall along the eastern boundary of the RCA has been designed to protect the facility from potential 100-year flood waters. The extended wall sections will also be made of 10-inch thick steel-reinforced concrete. The construction of the flood wall extensions will be completed prior to waste placement in the RCA. Additional information for the design of the flood wall is included in the Engineering Report for the RCA which is included as Attachment F of the May 2019 supplement to the hazardous waste permit renewal application.

A slurry wall will be constructed on the downgradient (south) side of the RCA as part of the Corrective Action Program for the RCA. Construction of the south slurry wall will be completed prior to placement of waste in the RCA. Additional information for the south slurry wall is included in the Engineering Report for the RCA which is included as Attachment F and the Response Action Plan which is included as Attachment M to the May 2019 supplement to the hazardous waste permit renewal application.

A number of utilities are present below the concrete slab in the RCA. These utilities consist of pipes, manholes, and sumps for the sanitary sewer, the storm sewer, and process drains. To prevent liquid from accumulating in the utilities and to remove the potential for collapse, the pipes, sumps, and manholes will be plugged with flowable fill or other low-permeable material (such as concrete or bentonite) prior to waste



placement activities. In addition, overhead utilities in and around the RCA will be disconnected and removed.

2.1.2 NDA and Slag Landfill

The NDA and Slag Landfill have been capped and closed by placement and compaction of a clay soil cover and establishment of vegetation. A concrete access road traverses the NDA from east to west and runs along the southern and eastern limit of the Slag Landfill.

Subgrade preparation will consist of removal of the upper 3 to 4 inches of soil to remove the vegetation and placement of approximately 6 inches of soil over the concrete access road. The stripped vegetative soil will be deposited as waste within the RCA.

A slurry wall will be constructed on the upgradient (north) side of the NDA and Slag Landfill as part of the Corrective Action Program for the RCA. A permeable reactive barrier (PRB) will be constructed on the western limit of the Slag Landfill. Additional information for the slurry wall and PRB gate is included in the Engineering Report for the RCA which is included as Attachment F and the Response Action Plan which is included as Attachment M to the May 2019 supplement to the hazardous waste permit renewal application.

Several surface water control features are present within the NDA. These features consist of pipes and drop boxes. To prevent liquid from accumulating in the utilities and to remove the potential for collapse, all subsurface drainage features will be removed or plugged with flowable fill or other low-permeable material (such as concrete or bentonite) prior to waste placement activities.

2.2 Waste Acceptance Limits and Testing

The following wastes are eligible to be placed in the RCA which is a corrective action management unit (CAMU) (after following the waste analysis plan procedures outlined in Attachment Q of May 2019 supplement to the hazardous waste permit renewal application):

- Excavated soil, battery case fragments, concrete or other remediation waste from affected properties on-Site. This includes soils or debris generated from the installation of the monitoring wells, slurry wall, and permeable reactive barrier wall at the Site or solid decontamination residue.
- Excavated soils, sediment, battery case fragments, concrete or other remediation waste from off-site Stewart Creek affected property (defined below as Off-site Stewart Creek Remediation Waste).
- Excavated soils, sediment, battery case fragments, concrete or other remediation waste from on-Site Stewart Creek affected property (defined below as on-Site Stewart Creek Remediation Waste).
- Soil stockpiled at the Railroad Museum (off-Site)



Excavated soil, battery case fragments, concrete or other remediation waste from affected properties on-Site (which is approved for placement in the RCA in accordance with Attachment Q of the of May 2019 supplement to the hazardous waste permit renewal application) may also be placed on the top of the footprint of the Slag Landfill or NDA to facilitate achieving final waste grades before capping. This is permitted through the use of the AOC policy as further described in Attachment M of the May 2019 supplement to the hazardous waste permit renewal application.

Waste characterization will be performed in accordance with the Waste Analysis Plan (WAP) included as Attachment Q to the May 2019 supplement to the hazardous waste permit renewal application.

Other remediation waste may also be placed in the RCA or on top of the Slag Landfill or NDA. These wastes may include soils from surface or subsurface excavation areas, concrete, sediment, or other wastes that meet the criteria for placement in the RCA. Demolition waste that meets the disposal criteria from any remaining demolition activities required at the FOP may also be placed in the RCA or on top of the Slag Landfill or NDA.

2.3 Method of Waste Placement

Excavated soils and sediments will be placed in lifts. The general operational approach dictates that the lifts be placed with the primary objective of limiting settlement and providing a surface suitable for equipment operation. The following subsections provide a narrative of how waste placement requirements will be implemented during the filling operations.

2.3.1 Hauling

As shown on the Site Layout (Figure 1 in Appendix K of the Final Closure Plan), waste hauling vehicles will use existing (or new if needed) roads to access the FOP waste areas, then, once in the FOP waste areas, use access roads established within the FOP waste areas, as directed by the Construction Manager. Waste hauling vehicles will unload in the designated drop area. This drop area will be demarcated by use of temporary barriers. Tracked or wheel equipment (loader and dozer) will be stationed within the FOP waste areas and will work in tandem to place the waste in lifts as required.

2.3.2 Rainfall Events

A significant rainfall event (determination to be made by the Construction Manager) would stop all loading and transportation activities in the FOP waste areas. No waste will be loaded, transported, or placed into the FOP waste areas during such an event. Work will resume as soon as possible after the rain stops and conditions allow. The decision to resume work will be the responsibility of the Construction Manager.



2.3.3 Interim Storage

Hazardous remediation wastes with TCLP concentrations that do not meet the CAMU treatment standards will be stabilized on-Site (for the presence of metals) in less than 90-day tanks or containers in compliance with applicable regulations and reanalyzed to confirm the CAMU treatment standard is met prior to placement in the RCA, or will shipped to an off-site facility permitted to accept the waste.

While wastes are being stored or stabilized they will be staged in an area within the footprint of the RCA that is lined and bermed to provide secondary containment. Containers will be covered to prevent storm water contact.

2.3.4 Waste Lifts

Waste will be placed in loose lifts compacted to a general thickness of approximately 1 foot. The waste will be compacted by a combination of the tracked dozer and appropriately sized compactor operating on the surface. Following compaction, the soil waste should have sufficient strength to adequately support construction equipment.

2.3.5 Ponded Water

Ponding of water over waste filled areas within the FOP waste areas will be prevented using the following techniques:

- Proper grading of interim waste slopes to promote positive water surface drainage toward drainage features (Figure 1 of Appendix K of the Final Closure Plan), then collected contact surface water will be handled as described below;
- Proper grading of final waste slopes to the elevations shown in the design plans (Appendix K of the Final Closure Plan), which provide surface water drainage without depressions or low spots; and
- Installation of upgradient temporary diversion berms as required to minimize the amount of water entering the disposal area.

Waste fill areas will be inspected to identify depressions or other potential ponding locations. If ponded water on the waste area is observed, action will be taken to remedy the problem. If water begins to accumulate in the active waste placement area, it will be removed with a small portable pump and transferred to the stormwater retention pond. The area of ponding will be filled with clean soil or waste fill and re-graded within seven days of the occurrence, weather permitting. Water that has been in contact with waste will be disposed of off-site as described in Section 4.0.

2.4 Physical Criteria of Waste

Soil, slag, sediment, and other approved remediation waste to be placed in the FOP waste areas shall not contain free water. Putrescible wastes shall not be placed in the FOP waste areas. Wastes shall be placed



in a manner to minimize formation of bridging or voids and to allow adequate compaction to prevent excessive consolidation or settlement after placement.

2.5 Daily Cover Operations

Daily cover of the active area will not be required because the waste will not attract birds or animals and does not contain material susceptible to being windblown. A Dust Control Plan is included as Appendix I to the Final Closure Plan. The exposed face of the waste will be limited to the area actively being filled. Other areas of exposed waste may be covered by a spray applied cover or temporary cover.

2.6 Equipment Decontamination

The existing equipment decontamination pad at the Wastewater Treatment Plant (WWTP) is anticipated to be used for equipment decontamination. If this existing pad is not used, an equipment decontamination area will be constructed within or near the FOP waste areas. Berms will be constructed around the perimeter. The decontamination area will be large enough to accommodate the largest piece of equipment that will be used during the operation and closure activities. The area will be graded to drain to one corner to allow the fluids generated during decontamination to be removed. A 40-mil high density polyethylene (HDPE) geomembrane will be placed over the graded area extending over the berms. The HDPE geomembrane will be anchored at the bottom of the berms to prevent it from becoming windblown. Timbers will be installed over the HDPE geomembrane to protect it from the tracks and tires of the heavy equipment during the decontamination activities.

The equipment will be decontaminated using potable water and high-pressure washers. The decontamination fluids will be pumped out of the lined decontamination area into a tank and transferred to the Facility's on-site wastewater treatment facility or transferred to an off-site treatment facility for treatment and disposal in accordance with applicable regulations. To limit the generation of contact storm water, if an equipment decontamination pad other than the existing pad at the WWTP is used, the decontamination pad will be covered with poly sheeting weighted with sandbags during periods of inactivity and during significant storm events.

During the operation and closure activities, decontamination residue will be containerized and placed in the FOP waste areas provided capacity is available for this waste. If the decontamination waste is not placed in the FOP waste areas, it will be characterized and disposed off-site in accordance with local, state, and federal requirements. If an equipment decontamination pad other than the existing pad at the WWTP is used, the geomembrane and timbers will be decontaminated using high pressure water which will subsequently be collected and transferred to the facility's on-site wastewater treatment facility or transferred to an off-site facility for treatment and disposal in accordance with applicable regulations. The liner and timbers will be placed in the RCA provided capacity is available for this waste. If not, the liner and timbers



will be transferred to a less than 90-day container for characterization, storage and disposal off-site in accordance with local, state and federal requirements.

If the decontamination pad is outside the FOP waste areas, following completion of decontamination activities and removal of the decontamination pad, three grab samples will be collected from the top six inches of soil using a hand auger or hand trowel beneath the decontamination area (exact dimensions of the decontamination pad to be determined) to confirm that there are no soil impacts beneath the decontamination pad from decontamination activities. Sampling and decontamination procedures will be the same as those described for excavation floor samples in Appendix 6.1 of the Response Action Plan included as Attachment M to the Part B Renewal Application.

The samples will be analyzed for total lead, cadmium, arsenic, antimony, and selenium. Should any of the results exceed applicable Protective Concentration Limits (PCLs) for any of these five metals, a minimum of six (6) inches of material underlying the decontamination area will be removed and placed into a temporary, less than 90-day container meeting applicable standards for waste characterization and analysis. This process will be repeated as required until the grab samples exhibits results that meet the PCLs for these five metals. Material will be transported off-site for disposal in accordance with local, state and federal requirements.



3.0 FINAL CLOSURE PROCEDURES

This section describes the site-specific procedures for Final Closure activities within the RCA, NDA and Slag Landfill, including placement of final cover. Final closure procedures and specifications are included in the Final Closure Plan and FOP QA/QC Plan and included here for reference.

Support functions, including contact water and storm water management procedures during final closure, will be the same as those identified during active operations and summarized in Sections 2.0 and 4.0 of this O&M Plan.

3.1 Working Surface Soil

The final surface of waste will be covered with a working surface soil layer (see the QA/QC Plan for the FOP final cover which is included as Appendix M to the Final Closure Plan for more detail). The surface will be drum rolled to a smooth condition and surveyed at 100-foot intervals to establish the elevations of the surface prior to placement of a geosynthetic clay liner (GCL). The working surface soil material will be obtained from an on- or off-site source, delivered using haul trucks, and spread with a dozer to prepare a smooth surface for the GCL. The working surface soil layer may be composed of waste placed, given the top 4 inches of the working surface is smooth and free of all sharp, angular objects as described in Appendix M. The surface should provide a firm, unyielding foundation for the GCL with no sudden sharp or abrupt changes or break in grade.

The NDA and Slag Landfill have been capped and closed by placement and compaction of a clay soil cover and establishment of vegetation. A concrete access road traverses the NDA from east to west and runs along the southern and eastern limit of the Slag Landfill.

Subgrade preparation will consist of removal of the upper 3 to 4 inches of soil to remove the vegetation and placement of approximately 6 inches of soil over the concrete access road. The stripped vegetative soil will be deposited as waste within the RCA.

Portions of the Slag Landfill will be regraded to reduce existing slopes to 4H:1V.

If waste is placed in the NDA or Slag Landfill, a working surface layer, as described above, will be placed over the waste prior to final cover construction.

3.2 Geosynthetic Clay Liner

Following the grading and smoothing of the working surface soil, a GCL will be placed directly above the working surface soil as shown on Figure 2 in Appendix K of the Final Closure Plan. The new GCL will extend to the flood wall along the south, and will extend to the FOP waste area perimeter as shown on Figures 2 and 3 in Appendix K of the Final Closure Plan.



3.3 Geomembrane Barrier

Following the installation of the geosynthetic clay liner, a textured 40-mil linear-low density polyethylene (LLDPE) geomembrane will be installed over the RCA, NDA and Slag Landfill GCL. The geomembrane will be anchored in the containment berm and attached to the flood wall with a batten strip along the south and east and will terminate in an anchor trench elsewhere along the FOP waste area perimeter. These details are shown on Figures 2 and 3 in Appendix K of the Final Closure Plan.

3.4 Geotextile/Geocomposite

A nonwoven geotextile layer shall be placed over the 40-mil textured LLDPE geomembrane in areas where the final cover slopes are 5% or less. The geotextile shall be 8-ounce per square yard (oz/sy), nonwoven and needle-punched. In areas with slopes greater than 5%, a 200-mil double-sided geocomposite drainage layer shall be placed over the geomembrane.

3.5 Clean Fill Material

An 30-inch thick layer of general clean fill material will be placed on top of the geotextile/geocomposite layer. The clean fill soil layer will consist of suitable soil obtained from an approved borrow source.

3.6 Vegetative Cover Soil

A 6-inch thick layer of soil capable of supporting vegetation will then be placed above the general clean fill layer in a loose condition and will be amended as necessary to establish a dense growth of vegetation. Once placement of the vegetative growth layer is completed, the area will be hydroseeded.



4.0 CONTACT WATER AND STORMWATER MANAGEMENT PROCEDURES

This section presents the contact water and stormwater management procedures to be used during the active operations and closure of the RCA, NDA and Slag Landfill as well as during the post-closure period. Inspection and monitoring requirements are presented in Section 6.0.

4.1 Water Management During Active Filling and Closure Operations

4.1.1 Contact Storm Water Management

As described in the Final Closure Plan, the RCA base consists predominantly of a concrete slab. The concrete slab has an existing surface water collection system that collects and directs water to the southwestern portion of the concrete slab, where it is conveyed via a pipe to the stormwater retention pond to the southwest of the former operational areas. Sediment dikes or check dams will be maintained at the pipe inlet in order to control sediment transport from the RCA to the stormwater retention pond.

Water infiltrating through the concrete slab is collected in a French Drain System (FDS) located along the flood wall and conveyed to a sump located at the southwest end of the facility where it can be collected and pumped to storage tanks at the WWTP for off-site disposal or treatment and discharge, if authorized. Prior to placement of waste, the FDS will be abandoned and the slurry wall will be installed at the Site. Water infiltrating through the concrete slab would be contained by the slurry wall.

Prior to waste placement in the RCA, a minimum 3-foot high containment berm will be constructed around the entire perimeter of the RCA waste placement area. The containment berm will prevent surface water run-on from the north will contain contact water run-off within the RCA.

Prior to significant rains, temporary soil berms may be formed to contain contact water and temporary covers may be placed over non-active areas to reduce the volume of contact water.

4.1.2 Exterior Storm Water Management

A containment berm will surround the areas of waste placement to prevent storm water from outside the FOP running on to waste. The flood wall will protect the area from flood waters in Stewart Creek.

4.1.3 Decontamination Water

Decontamination procedures and protocols to be used at this site are discussed in Section 2.6 above. Decontamination waters will be handled as described in Section 2.6.

4.2 Post-Closure Water Management

After the FOP waste areas are filled and the cover system installed, the water volume within the waste is expected to be negligible and only non-contact storm water will be generated, simplifying the associated management procedures.



4.2.1 Storm Water Management

Following final closure, storm water on southern and eastern facing slopes of the RCA will flow to a perimeter channel formed adjacent to the flood wall and/or directed to the existing drainage pipe and directed to the stormwater retention pond as shown on Figure 1 in Appendix K of the Final Closure Plan. Run-off from the northern portion of the RCA will flow radially toward the NDA.

In general, existing grades and drainage patterns will be maintained on the NDA and Slag Landfill cover. The majority of the NDA drain to a ditch formed in the NDA final cover. The proposed ditch is located above an existing drainage channel, which will direct surface water to the northern tributary of Stewart Creek. The westernmost portion of the RCA and NDA will drain to a v-ditch, which directs flow around the northern edge of the sheet pile wall.

Calculations for channel sizing are included in Appendix O of the Final Closure Plan.

Storm water drainage facilities will be inspected regularly as described in the Final Closure Plan. Fill material, siltation, and excessive plant growth will be removed from drainage waterways to prevent obstruction of flow. Erosion on the sides or bottoms of the drainage waterways will be repaired and reconstructed as necessary.



5.0 SUPPORT OPERATIONS PROCEDURES

This section describes the site-specific support operations procedures for hauling and handling waste.

5.1 Waste Hauling Vehicles and Traffic Control

Vehicles for hauling waste must be suitable for transporting this material from Stewart Creek or FOP areas. The waste haulers will not allow waste from their vehicles to impact any roadways on which they travel. In addition, waste haulers will be responsible for observing the speed limits, traffic and safety requirements. Waste hauling vehicles shall be covered to minimize dust migration during transportation. Waste hauling vehicles will follow only those routes designated by the Construction Manager.

Waste hauling vehicles will track each load, documenting the quantity and time loaded. The Construction Manager designee at the entry to the FOP waste areas will stop each truck and log its arrival in the records, or the information will be recorded in an equivalent manner. An inventory number will be assigned to each load by the Construction Manager designee. These logs will become part of the final recordkeeping as described in the Final Closure Plan.

5.2 Surveying

As described in the QA/QC Plan, the working surface layer and the soil cover layers will be surveyed by a surveyor or professional engineer licensed in the state of Texas.

5.3 Soil Erosion and Sediment Control

Erosion and sedimentation will be reduced and controlled using best management practices. Erosion control measures will include hydroseeding, as appropriate. Erosion calculations, included in Appendix O of the Final Closure Plan, indicate that, once the final cover is installed and vegetation is established, the potential for erosion and sedimentation will be minor.

5.4 Noise Control

Waste placement operations are expected to occur during daytime hours and will be contained within the FOP boundary; therefore, no special noise controls are needed. However, noise levels for equipment used at the FOP will comply with applicable Occupational Safety and Health Administration (OSHA) requirements as described in each contractor's Health and Safety Plan (to be prepared prior to the start of work at the Site).

5.5 Odor Control, Air Monitoring and Dust Suppression

Odorous constituents are not expected to be an issue based upon the types of wastes that are approved for acceptance at the FOP waste areas. Ambient air monitoring will be performed as described in the Air Monitoring Plan (included as Appendix P to the Final Closure Plan) and each contractor's health and safety



plan, which will be prepared prior to the start of work at the Site. A Dust Control Plan has also been prepared for the FOP waste areas and is included as Appendix Q to the Final Closure Plan.

5.6 Site Security

Unauthorized personnel will not be permitted in or near the FOP. The site will not be open to the public at any time. Security devices, including chain-link fencing, gates, locks, and signs, will be maintained around the perimeter of the FOP or around the capped areas throughout the post closure care period, unless otherwise approved by TCEQ. A security guard is contracted for the FOP when the FOP is not staffed [during the closure process]. Once closure is complete, the need for security guard will be re-evaluated.

To minimize the possibility that wildlife or unauthorized individuals will enter the area, a 6-foot high fence, with a lockable entrance gate, will be installed around the FOP perimeter following final closure activities (see Figure 2 of the Closure Plan). The fence will reduce the possibility for large wildlife or unauthorized individuals to enter the FOP and potentially damage liners, interfere with operations, come in contact with waste materials, or track waste materials outside of the FOP.

During active operations, the Construction Manager designee, located at the entrance to the FOP or the FOP waste areas, will stop each vehicle or person to determine whether they are permitted in the waste placement area. At other times the gate to the FOP will be locked.

All Site security elements are included in the periodic inspections discussed in Section 6.0 and the Final Closure Plan.

5.7 Fire Protection and Emergency Measures

A Contingency Plan addressing fire protection and emergency measures has been prepared and is included as Appendix J to the Final Closure Plan.



6.0 INSPECTIONS AND MONITORING

6.1 Active Operations Site Inspections and Monitoring

During active operations, the FOP waste areas will be inspected a minimum of weekly and after each significant storm event to detect evidence of the following:

- Deterioration, malfunction, or improper operation of surface water control features;
- Erosion of cap or berms;
- Signs of seepage, settlement, cracks or other signs of damage to the flood wall;
- Indications of sand boils outside the flood wall;
- The presence of trees or high vegetation growing along the flood wall;
- Procedures followed by operations and maintenance staff; and
- The condition of the operating equipment, including earth moving equipment, alarms and pumps.

An inspection check form with explanations of observations made will document each of these weekly inspections and become part of the site records (See Appendix A for Inspection and Repair Forms). In addition, inspections of the security system (existing fences, gates, locks, etc.), emergency equipment, and communications equipment will be conducted weekly during active operations. These areas are described in the following subsections and documented on the Inspection Form, which is included in Attachment A of this O&M Plan. If, during a periodic inspection, damage, deterioration, or malfunction of any of the systems, components, or facilities is observed, steps shall be initiated to rectify the situation. Site personnel, or their designated contractor, will perform minor maintenance activities as described in this O&M Plan. Maintenance and repair actions will be documented on the Repair Report Form included in Attachment A of this O&M Plan.

6.1.1 General FOP Waste Area Conditions and Operating Conditions

The following will be inspected weekly and noted on the Inspection Form:

- Date of inspection;
- Name of inspector;
- Project features that were inspected;
- Overall condition of project features;
- Photographs showing flood damages, deficiencies, and overall project condition;
- Signs of erosion, obstructions, or ponding on the exterior berm slopes and on temporary water control systems, including ditches and culverts;
- Condition of heavy and support equipment, including signs of leaks or other items requiring maintenance;
- Access road conditions (potholes, washouts, ponding, or other deterioration);



- Inventory and condition of emergency and communications equipment (all should be available, stocked, and functioning);
- Conditions of any tanks used on-site for fuel or other material storage;
- Conditions of existing fences, locks, gates, and signs (i.e., note any missing items, damage, or signs of tampering);
- Flood wall conditions;
- Maintenance that has been completed;
- Maintenance that is currently being performed; and
- Maintenance items that need to be accomplished in the future

The FOP access road will be inspected and maintained so that routine inspections can be performed. Any potholes, washouts, or excessive “washboarding” of the road will be repaired and the road will be graded, as needed.

6.1.2 Final Cover

The final cover and any temporary cover will be inspected by walking the FOP waste areas to confirm positive drainage from the cover to the perimeter drainage features and assess the condition of the cover. Any subsidence that significantly alters drainage from the cover will be corrected. Any areas that allow water to pond on the cover will be backfilled and revegetated. The inspector will look for evidence of erosion, subsidence, ponded water, animal burrows, cracks along the cover, and loss of soil. Any excessive erosion will be identified and corrected. Erosion over large areas will be backfilled and revegetated. The following should be noted on the inspection form:

- Rills, gullies and crevices 6 inches or deeper in the vegetative soil layer
- Cover settling or subsidence that affects surface water run-off
- Reworked surfaces and areas with sparse or eroded vegetation in excess of 100 square feet cumulatively
- Brush, trees or similar invasive vegetation with tap roots growing in areas not designated for this type of vegetation
- Evidence of burrowing or other cover disturbance by burrowing animals
- Effectiveness of storm water drainage features

The vegetative surface will be mowed after initial establishment of the planted species. Mowing is assumed to occur twice a year. Any areas with rills and gullies greater than 6 inches in depth will be filled with soil and the vegetation re-established. Settlement, subsidence, or displacement of the RCA will be corrected. Temporary erosion and sediment control measures will be employed on steep slopes to enhance restoration of the restored surfaces.



6.2 Post-Closure Inspections, Maintenance and Monitoring

Post-closure inspections, maintenance and monitoring are included in the Final Closure Plan to which this document is an appendix.



7.0 EQUIPMENT

The following section describes the general types of equipment to be used at the FOP waste areas, the functions this equipment performs and equipment maintenance requirements. All equipment and tools used in the performance of the work are subject to the approval of the Construction Manager before work is started.

7.1 Heavy Equipment

Heavy equipment available for day-to-day operations of the disposal area may consist of bulldozer, earth moving equipment, waste or soil compactors (as needed), drum rollers, and a water truck, as well as other equipment as needed. When major repairs to heavy equipment are needed, the landfill operator or contractors will make additional equipment of similar size and function available. All heavy equipment shall be fitted with fully enclosed cabs while operating over exposed waste.

7.2 Support Equipment

In addition to the required heavy equipment, miscellaneous pickups, and/or other light utility vehicles, as well as various portable water pumps, instruments, and safety and training equipment will be on-site as necessary. Pickup trucks shall be used to haul landfill personnel within the FOP to conduct site duties. A portable pump shall be used for pumping stormwater from excavations and from ponded areas, as needed.

CAMU support equipment includes mobile and portable equipment used in operating and maintaining the FOP waste areas. The support equipment may include

- Trucks (dump, pickup, all-terrain, etc.);
- Portable pumps;
- Portable generator;
- Portable air compressor;
- Temporary light fixtures;
- Roll off containers;
- Tankers;
- Fuel storage tank;
- CQA/testing equipment; and
- Health and safety equipment.

7.3 Stationary Operating Equipment and Tools

Stationary operating equipment will include the equipment installed at the FOP waste areas during construction, such as

- Contact storm water storage and treatment tanks (if needed);



- Emergency power generating equipment;
- Piping; and
- Water hoses.

Emergency equipment is discussed in the Contingency Plan included as Appendix J to the Final Closure Plan.

7.4 Equipment Maintenance Requirements

Maintenance is necessary to keep equipment in a condition that assures continuous proper operation of the assigned functions. Maintenance can be divided into three basic categories:

- Preventive Maintenance – routine work that can be accomplished with minimal or no downtime of equipment. These tasks include routine inspections, lubrication, and adjustments.
- Corrective Maintenance – the non-routine repair work that may require some equipment downtime. These tasks include changing belts and replacing work bearings and brushes, etc.
- Major Overhauls – large jobs that usually require extensive downtime. These tasks can involve considerable expenditures of money and may require additional labor.

The heavy equipment maintenance program can be divided into two major categories:

- Equipment maintenance and repair to be performed by the heavy equipment suppliers; and
- Maintenance activities to be performed by operator and/or maintenance personnel.

Maintenance must also be performed on the support and stationary equipment. The frequency and extent of maintenance will be as recommended by the manufacturer.

Each piece of mechanical equipment on the FOP, from personal exposure meters to heavy equipment, will be inspected routinely. All emergency equipment will be regularly inspected to assure that it is present, functional and decontaminated. Whenever a problem is discovered with equipment necessary for safe operations, operations will be curtailed until a satisfactory repair or replacement can be put in place.



8.0 PERSONNEL AND TRAINING

The Site personnel will include at a minimum, a Site manager and/or supervisor (Exide representative or designated Contractor Construction Manager), equipment operators and laborers. Personnel described in this section will possess the required credentials for their respective roles, in accordance with OSHA and safety requirements. Information regarding personnel credentials will be provided to Exide and records regarding personnel credentials will be maintained at the Exide trailer at the FOP or an alternate location specified by Exide and approved by the TCEQ Executive Director (as described in the Closure Plan Section 5.0).

8.1 Personnel

8.1.1 Site Manager

The Site Manager (SM) will be responsible for all activities at the FOP and will be the designated contact person for regulatory compliance matters. The SM or his designated alternate will provide on-site management of the Facility operations and will be responsible for day-to-day operations with applicable regulatory requirements and this O&M Plan. The SM or designated alternate will provide adequate staffing to operate the facility in accordance with applicable regulatory requirements and this O&M Plan. The SM or his designated alternate will be responsible for inspection and/or maintenance of all equipment and operating systems required for the operations and closure activities.

The SM or designated alternate must be an experienced personnel manager, who is familiar with and has the aptitude to implement operational aspects of waste disposal operations including knowledge of relevant regulations and permit requirements, and safe management practices.

Direct operation and maintenance activities, as described throughout this report, are the responsibility of the SM. The major responsibilities of the SM during operation of the FOP waste areas include the following:

- Operate and coordinate all disposal of waste;
- Ensure that all applicable health and safety protocols are followed in accordance with the approved plan;
- Ensure that all personnel are properly trained for operations;
- Maintain records of methods of placement within the FOP waste areas;
- Ensure waste is placed in accordance with procedures described in this O&M Plan;
- Divert storm water away from waste material to the extent practical and appropriately manage contact stormwater;
- Maintain records of applicable inspections outlined in this O&M Plan;
- Perform any corrective measures required as a result of these inspections;
- Perform routine maintenance on equipment;
- Attain all required record survey information;



- Control potential traffic congestion; and
- Maintain site dust and erosion control throughout the duration of operations.

8.1.2 Equipment Operators

Equipment operators will operate vehicles and heavy equipment associated with FOP waste area operations and closure in a safe manner to achieve functions necessary for operation and closure of the Facility. Duties may include spreading waste and final cover materials, maintaining access roads, establishing and maintaining stormwater drainage, and placement of soils.

8.1.3 Laborers

Site laborers will have responsibilities as directed by the SM or the designated alternate. These duties may include dust control, inspection and maintenance of gates, perimeter fencing, and other duties as necessary.

8.2 Personnel Training

The SM will be responsible for training operators and laborers on the requirements of this O&M Plan, the Contingency Plan, and other items as needed. Documentation of on-site training will be maintained.

Personnel are trained on

- Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment,
- Key parameters for waste feed (i.e., waste hauling vehicles) cut-off systems,
- Communications or alarm systems,
- Response to fires or explosions,
- Response to groundwater contamination incidents, and
- Shutdown of operations procedures.

Personnel are fully trained on all relevant O&M and safety procedures within six months after the date of their employment or appointment to a new position. Personnel who have not yet been fully trained do not work in unsupervised positions until they have received all necessary training. Exide maintains records at the facility which include each employee's name, job description, the amount of both introductory and continuing training necessary for the position, and the current status of the employee's training.

The training program covering the FOP waste area's O&M and safety procedures is reviewed annually. All personnel are required to participate in the review. Documentation of on-site training will be maintained at the FOP.



8.3 Worker Safety Programs

Operations at the FOP waste areas will comply with the health and safety procedures established by the contractor's site-specific Health and Safety Plan. Each contractor will be responsible for developing a site-specific health and safety plan in accordance with Exide internal requirements as well as applicable regulatory requirements. Exide will use appropriately trained personnel to operate and maintain the FOP waste areas. Each contractor will be responsible for providing required health and safety training to their personnel and providing appropriate documentation to Exide. All contractors working at the Site will also attend a health and safety orientation provided by an Exide representative prior to beginning work at the Site.

8.4 Coordination

This O&M Plan will be provided electronically to contractors prior to mobilizing to the Site to ensure that requirements can be incorporated into standard work procedures and plans that will be used at the Site. The SM will be responsible for coordination of all contractor activities and resolving potential conflicts.

APPENDIX A
INSPECTION AND MAINTENANCE FORMS

**INSPECTION FORM
EXIDE TECHNOLOGIES FOP WASTE AREAS**

Date: _____ Type of Inspection (Storm, Monthly, Quarterly or Semi-Annual): _____

Inspector(s): _____

Signature(s): _____

Instructions: For any items that require maintenance, submit this form and notify the Exide representative of any recommended actions. Schedule remedial actions complete the **REPAIR REPORT FORM** when complete.

Facility Component	Inspection Item	Inspection Frequency				Condition		Notes or Recommended Repairs
		Storm	Monthly	Quarterly	Semi-Annually	Acceptable	Maintenance Needed	
Final Cover	Access road conditions							
	Surface erosion, rills, gullies, and crevasses; minor cover settling or subsidence							
	Major cover settlement							
	Water on unit surface							
	Sparse or eroded vegetation							
	Invasive vegetation							

Facility Component	Inspection Item	Inspection Frequency				Condition		Notes or Recommended Repairs
		Storm	Monthly	Quarterly	Semi-Annually	Acceptable	Maintenance Needed	
	Cover disturbance by burrowing animals							
	Grass							
Surface Water Management	Ditches							
	Storm Water Pond							
	Erosion and sediment control devices							
	Culverts and conveyance pipes							
	Grass							
	Surface water drainage							
Flood Wall	Flood wall waterstop and joint filters							
	Seepage, settlement, sand boils, saturated soil areas, cracks, or other damage to flood wall							

Facility Component	Inspection Item	Inspection Frequency				Condition		Notes or Recommended Repairs
		Storm	Monthly	Quarterly	Semi-Annually	Acceptable	Maintenance Needed	
	Vegetation (no trees or high vegetation along flood wall)							
	No trash or debris accumulation along flood wall							
	No bank erosion/caving observed that would endanger wall stability							
Groundwater Monitoring System	Protective casing							
	Locks							
	Ground surface seal							
	Accumulation of surface water							
	Concrete pad and bollards							
General Facility Components	Fences							
	Locks							
	Gates							

Facility Component	Inspection Item	Inspection Frequency				Condition		Notes or Recommended Repairs
		Storm	Monthly	Quarterly	Semi-Annually	Acceptable	Maintenance Needed	
	Signs							
	Access Roads							
	Surveyed Benchmarks							
	Safety and Emergency Equipment							

**REPAIR REPORT FORM
EXIDE TECHNOLOGIES FRISCO RECYCLING CENTER**

Inspector(s): _____

Signature(s): _____

Instructions: Note the problem(s) identified during the inspection, date the problem(s) was identified, actions performed to address the problem(s), date the problem(s) was addressed, and date the problem(s) was fully addressed.

Deficiency	Date Identified	Action Taken	Date Addressed	Date Completed

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

solutions@golder.com
www.golder.com

Golder Associates Inc.
14950 Heathrow Forest Pkwy, Suite
280
Houston, TX 77032 USA
Tel: (281) 821-6868
Fax: (281) 821-6870



Engineering Earth's Development, Preserving Earth's Integrity

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation